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10/642,741	08/19/2003	Valentin Ossman	3065/1	3790

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EXAMINER

MEW, KEVIN D

ART UNIT	PAPER NUMBER
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2616

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/642,741	Applicant(s) OSSMAN, VALENTIN	
	Examiner Kevin Mew	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-33 and 39-41 is/are rejected.
- 7) ☒ Claim(s) 10 and 34-38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/30/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Drawings

1. Figures 1-6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code on page 5, line 13 of the specification. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Appropriate correction is required.

Claim Objections

3. Claims 1, 9, 16 are objected to because of the following informalities:

In the last line of each of claims 1, 9, and 16, delete the ";" and replace it with a period "." Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-33, 39-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Boucher et al. (US Publication 2004/0003126 A1).

Regarding claim 1, Boucher discloses a method for processing packets in a TCP/IP communications network comprising the steps of:

a. providing a network traffic accelerator (NTA) (combination of host 52 and INIC 50, Fig. 1) implementing internally an internal transport layer (implementing internal TCP layer 75, paragraph 0078, Fig. 1), an internal network layer (internal IP layer stack 74, paragraph 0078, Fig. 1) and at least one internal data link layer (internal data link layer MAC 73, paragraph 0078, Fig. 1), said internal transport, network and at least one data link layers connected along an internal receive path (TCP/IP layer stack and MAC layer stack are connected along an internal receive path, see data path arrow going up the protocol stack at host 52, Fig. 1);

b. inputting packets from an external data link layer into said internal network layer (inputting network frames from an external MAC layer 63 into the internal IP layer 74, paragraph 0078, Fig. 1); and

c. processing said packets (processing network frames through the protocol stack at the host 52, paragraph 0078, Fig. 1).

Regarding claim 2, Boucher discloses the method of claim 1, wherein said step of inputting packets includes inputting packets through an arbiter (inputting network frames through the INIC 50, paragraph 0078 and Fig. 1) included in said NTA (included in the combination of INIC 50 and host 52, paragraph 0078), said arbiter connected to said internal network layer (said TDI is connected to the internal IP layer 74, paragraph 0078, Fig. 1).

Regarding claim 3, Boucher discloses the method of claim 1, wherein said step of inputting packets includes inputting protocol-unsupported packets (inputting network frames includes frames that are not valid frames), and wherein said step of processing includes processing said protocol-unsupported packets externally in an external software network layer (processing includes verifying whether the frames are valid externally in an IP layer of the INIC 50, paragraph 0083, Fig. 1) to yield protocol-processed packets (to yield frames that have been verified, paragraph 0083).

Regarding claim 4, Boucher discloses the method of claim 3, wherein said software network layer is implemented in a separate processing unit selected from the group consisting of a central processing unit, a network processing unit and a dedicated processing unit (implemented in a separate INIC 50, paragraph 0083, Fig. 1).

Regarding claim 5, Boucher discloses the method of claim 3, wherein said protocol-unsupported packets include IP fragment packets (network frames include IP packets, paragraph

0083, Fig. 1).

Regarding claim 6, Boucher discloses the method of claim 3, wherein said step of processing further includes returning said protocol-processed packets to said NTA for further processing in said internal transport layer (returning the processed network frames to host 52 for further processing in the TCP layer during the slow path mode, paragraph 0078, Fig. 1).

Regarding claim 7, Boucher discloses the method of claim 6, wherein said further processing in said NTA includes processing said protocol processed packet in a session layer (processing in INIC 50 includes processing the processed frames in the TDI layer during the slow path mode, paragraph 0078 and Fig. 1).

Regarding claim 8, Boucher discloses the method of claim 1, wherein at least one of said internal transport, network and data link layers is implemented in hardware (IP layer 74, TCP layer 75, TDI layer 76 are implemented in hardware processing layers, paragraph 0078).

Regarding claim 9, Boucher discloses a method for processing packets in a communications network implementing a TCP/IP protocol, comprising:

a. providing a network traffic accelerator (NTA) (combination of host 52 and INIC 50, Fig. 1) implementing internally an internal transport layer (implementing internal TCP layer 75, paragraph 0078, Fig. 1), an internal network layer (internal IP layer stack 74, paragraph 0078, Fig. 1) and at least one internal data link layer (internal data link layer MAC 73, paragraph 0078,

Fig. 1), said internal transport, network and at least one data link layers connected along an internal receive path (TCP/IP layer stack and MAC layer stack are connected along an internal receive path, see data path arrow going up the protocol stack at host 52, Fig. 1);

b. processing in said at least one internal data link layer a packet (processing in MAC layer 73, Fig. 1) originating from a physical layer (originating from a physical layer 55, paragraph 0078, Fig. 1);

c. checking whether said packet is supported by a protocol of said internal network layer (checking if the frame is supported by the host or the connection is not maintained in the INIC, paragraph 0170, Fig. 1); and

d. based on the result of said checking (based on said checking, paragraph 0170), processing said packet in a network layer selected from the group consisting of said internal network layer and an external network layer (processing said frame in the slow path consisting of the internal IP layer 74 in the INIC 50, paragraph 0170 and Fig. 1);

Regarding claim 11, Boucher discloses the method of claim 9, wherein said result of said checking includes finding that said packet is protocol-supported, whereby said protocol-supported packet is processed in said internal network layer (finding that the frame is supported by the host or the connection is not maintained in the INIC, the slow-path is then used and the frame is passed to the host for further processing in the IP layer 74, paragraph 0170, Fig. 1).

Regarding claim 12, Boucher discloses the method of claim 9, wherein said result of said checking includes finding that said packet is protocol-unsupported, whereby said protocol-

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unsupported packet is processed in said external network layer to yield a protocol-processed packet (finding that the frame is unsupported by the host or the connection is maintained by the INIC 50, then the frame is processed in the external network layer under the fast path mode, paragraph 0170, Fig. 1).

Regarding claim 13, Boucher discloses the method of claim 12, wherein said protocol-unsupported packets include IP fragment packets (network frames include IP packets, paragraph 0083, Fig. 1).

Regarding claim 14, Boucher discloses the method of claim 12, wherein said step of externally processing to yield a protocol-processed packet is followed by the step of returning said protocol-processed packet to said NTA for further processing in said internal transport layer (returning the processed network frames to host 52 for further processing in the TCP layer during the slow path mode when the frame is supported by the host or the connection is not maintained by the INIC 50, paragraph 0170, Fig. 1).

Regarding claim 15, Boucher discloses the method of claim 9, wherein at least one of said internal transport, network and data link layers is implemented in hardware (IP layer 74, TCP layer 75, TDI layer 76 are implemented in hardware processing layers, paragraph 0078).

Regarding claim 16, Boucher discloses a method for accelerated packet processing in a TCP/IP communications network, comprising:

a. providing a network traffic accelerator (NTA) (combination of host 52 and INIC 50, Fig. 1) implementing internally an internal transport layer (implementing internal TCP layer 75, paragraph 0078, Fig. 1), an internal network layer (internal IP layer stack 74, paragraph 0078, Fig. 1) and at least one internal data link layer (internal data link layer MAC 73, paragraph 0078, Fig. 1), said internal transport, network and at least one data link layers connected along an internal transmit path (TCP/IP layer stack and MAC layer stack are connected along an internal transmit path, see data path arrow going up the protocol stack at INIC 50, Fig. 1);

b. processing in said internal transport layer a packet originating from a session layer (processing in internal TCP layer 75 a frame originating from NetBIOS 76, Fig. 1, see the path going down the protocol stack at INIC 50, Fig. 1);

c. checking whether said packet is supported by a protocol of said internal network layer (checking whether the protocol is IP supported, paragraph 0083);

d. based on the result of said checking, processing said packet in a network layer selected from the group consisting of said internal network layer and an external network layer (processing the frame by comparing the source and destination IP address with those in each of the CCBs maintained by INIC 50, paragraph 0083);

e. forwarding said packet to said at least one internal data link layer for a check (frame is forwarded down the protocol stack to internal MAC layer 73 under the fast path mode, paragraph 0079; transmit path works in the same fashion as the receive path); and

f. based on said check, processing said packet in a data link layer selected from the group consisting of said at least one internal data link layer and an external data link layer (processing frame in the internal MAC layer 73, paragraphs 0078, 0079);

Regarding claim 17, Boucher discloses the method of claim 16, wherein said step of checking finds that said packet is protocol-supported, and wherein said step of processing said packet in a network layer includes processing said packet in said internal network layer (finding that the frame is supported by the host or the connection is not maintained in the INIC, the slow-path is then used and the frame is passed to the host for further processing in the IP layer 74, paragraph 0170, Fig. 1).

Regarding claim 18, Boucher discloses the method of claim 16, wherein said step of checking finds that said packet is protocol unsupported, and wherein said step of processing said packet in a network layer includes processing said packet in said external network layer (finding that the frame is unsupported by the host or the connection is maintained in the INIC, the fast-path is then used and the frame is passed to the INIC for further processing in the IP layer 64, paragraph 0170, Fig. 1).

Regarding claim 19, Boucher discloses the method of claim 16, wherein said step of processing said packet in an external data link layer includes processing said packet in a network interface card data link layer (processing said frame in an INIC MAC layer under the fast-path, paragraph 0170, Fig. 1).

Regarding claim 20, Boucher discloses the method of claim 16, wherein at least one of said internal transport, network and data link layers is implemented in hardware (IP layer 74, TCP layer 75, TDI layer 76 are implemented in hardware processing layers, paragraph 0078).

Regarding claim 21, Boucher discloses a method for accelerated processing of a packet in a TCP/IP communications network comprising the steps of:

a. providing a network traffic accelerator (NTA) (combination of host 52 and INIC 50, Fig. 1) implementing internally an internal transport layer (implementing internal TCP layer 75, paragraph 0078, Fig. 1), an internal network layer (internal IP layer stack 74, paragraph 0078, Fig. 1) and at least one internal data link layer (internal data link layer MAC 73, paragraph 0078, Fig. 1), said internal transport, network and at least one data link layers connected along an internal transmit path (TCP/IP layer stack and MAC layer stack are connected along an internal transmit path, see data path arrow going up the protocol stack at INIC 50, paragraph 0079 and Fig. 1);

b. inputting a protocol-unsupported packets from an external data link layer into said internal network layer (inputting network frames from an external MAC layer 63 into the internal IP layer 74, paragraph 0078, Fig. 1); and

c. sending said protocol-unsupported packet from said internal network layer to be processed externally in an external software network layer (finding that the frame is unsupported by the host or the connection is maintained by the INIC 50, then the frame is processed in the external network layer under the fast path mode, paragraph 0170, Fig. 1).

Regarding claim 22, Boucher discloses the method of claim 21, wherein said software network layer is implemented in a separate processing unit (implemented in a separate INIC 50, paragraph 0083, Fig. 1).

Regarding claim 23, Boucher discloses the method of claim 22, wherein said separate processing unit is selected from the group consisting of a central processing unit, a network processing unit and a dedicated processing unit (implemented in a dedicated INIC 50, paragraph 0083, Fig. 1).

Regarding claim 24, Boucher discloses the method of claim 21, wherein said protocol-unsupported packet includes an IP fragment packet (network frames include IP packets, paragraph 0083, Fig. 1).

Regarding claim 25, Boucher discloses the method of claim 21, wherein said step of sending said protocol-unsupported packet from said internal network layer to be processed externally is followed by the step of returning said protocol-processed packet to said NTA and checking the data link layer destination of said protocol-processed packet (returning the processed network frames to host 52 for further processing in the TCP layer during the slow path mode when the frame is supported by the host or the connection is not maintained by the INIC 50, paragraph 0170, Fig. 1).

Regarding claim 26, Boucher discloses the method of claim 25, wherein said checking results in said destination being said internal data link layer, the method further comprising processing said protocol-processed packet in said internal data link layer, followed by processing said protocol-processed packet in a NTA physical layer (finding that the frame is supported by the host or the connection is not maintained in the INIC, the slow-path is then used and the frame is passed to the host for further processing in the internal MAC layer 73, paragraph 0170, Fig. 1).

Regarding claim 27, Boucher discloses the method of claim 25, wherein said checking results in said destination being an external data link layer, the method further comprising processing said protocol-processed packet in said external data link layer (finding that the frame is unsupported by the host or the connection is maintained in the INIC, the fast-path is then used and the frame is passed to the INIC for further processing in the MAC layer 63, paragraph 0170, Fig. 1).

Regarding claim 28, Boucher discloses the method of claim 27, wherein said external data link layer resides in a network interface card (processing said frame in an INIC MAC layer under the fast-path, paragraph 0170, Fig. 1).

Regarding claim 29, Boucher discloses a network traffic accelerator comprising:

- a. an internal transport layer (implementing internal TCP layer 75, paragraph 0078, Fig. 1), an internal network layer (internal IP layer stack 74, paragraph 0078, Fig. 1) and at least one internal data link layer (internal data link layer MAC 73, paragraph 0078, Fig. 1), said internal

transport, network and at least one internal data link layer connected along an internal receive and transmit paths (TCP/IP layer stack and MAC layer stack are connected along an internal receive path, see data path arrow going up the protocol stack at host 52, Fig. 1); and

b. first means for processing a packet traveling along said receive path (INIC 50 processing frame traveling up the protocol stack at host 52 under the slow-path mode, paragraph 0078, Fig. 1), said packet originating from a section layer selected from the group consisting of an internal physical layer and an external physical layer (the frame originated from the physical layer 55 of INIC 50, Fig. 1).

Regarding claim 30, Boucher discloses the network traffic accelerator of claim 29, further comprising second means for processing a packet traveling along said transmit path (processing frame traveling along the transmit path or the path down the protocol stack at host 52, paragraph 0078 and Fig. 1), said packet originating from a physical layer selected from a group consisting of an internal section layer and an external section layer (the frame originated from the internal physical layer 59 of host 52, Fig. 1).

Regarding claim 31, Boucher discloses the network traffic accelerator of claim 29, wherein said packet is selected from the group consisting of a protocol-supported packet and a protocol unsupported packet (said frame is supported by the host or the connection is not maintained in the INIC, the slow-path is then used and the frame is passed to the host for further processing in the IP layer 74, and said frame is unsupported by the host or the connection is

maintained in the INIC, the fast-path is then used and the frame is passed to the host for further processing in the IP layer 74, paragraph 0170, Fig. 1, paragraph 0170, Fig. 1).

Regarding claim 32, Boucher discloses the network traffic accelerator of claim 30, wherein said packet is selected from the group consisting of a protocol-supported packet and a protocol unsupported packet (said frame is supported by the host or the connection is not maintained in the INIC, the slow-path is then used and the frame is passed to the host for further processing in the IP layer 74, and said frame is unsupported by the host or the connection is maintained in the INIC, the fast-path is then used and the frame is passed to the host for further processing in the IP layer 74, paragraph 0170, Fig. 1, paragraph 0170, Fig. 1).

Regarding claim 33, Boucher discloses the network traffic accelerator (combination of host 52 and INIC 50, Fig. 1) of claim 31, wherein each said packet is selected from the group of an external packet (frame comes from the INIC 50 under the slow-path mode, Fig. 1) and an internal packet, and wherein said first means (INIC 50, Fig. 1) include a first arbiter connected in said internal return path to said internal network layer (connected to the internal IP layer 74, Fig. 1) and operative to perform round robin arbitration between said external (perform processing frame in the external protocol stack at INIC 50 under the fast-path mode, paragraph 0078, Fig. 1) and internal packets (perform processing frame in the external protocol stack at host 52 under the slow-path mode, paragraph 0078, Fig. 1).

Regarding claim 39, Boucher discloses the network traffic accelerator of claim 33, wherein at least one of said internal transport, network and data link layers is implemented in hardware (IP layer 74, TCP layer 75, TDI layer 76 are implemented in hardware processing layers, paragraph 0078).

Regarding claim 40, Boucher discloses in a TCP/IP communications network, a system for packet processing comprising:

- a. a processing unit (INIC 50, Fig. 1);
- b. a hardware network traffic accelerator (NTA) unit (host 52, Fig. 1) implementing a hardware network layer protocol (hardware IP layer 74, Fig. 1), a hardware transport layer protocol (hardware IP layer 74, Fig. 1) and a hardware data link protocol (hardware MAC layer 73, Fig. 1) of a seven layer OSI model thereby providing a NTA TCP/IP protocol (TCP/IP at host 52, Fig. 1), said NTA separate from said processing unit (INIC 50 and host 52 are separate processing units, paragraph 0078, Fig. 1); and
- c. means to process in said processing unit protocol-unsupported packets, whereby packets unsupported by said NTA TCP/IP protocol and received in said hardware network layer are sent to said processing unit for processing (finding that the frames are unsupported by the host or where the connection is maintained by the INIC 50, then the frames are processed in the external network layer at INIC 50 under the fast path mode, paragraph 0170, Fig. 1) to yield network layer protocol-processed packets (frames are processed up the protocol stack under the fast-path mode at INIC 50, paragraph 0170, Fig. 1), said protocol-processed packets returned to

said NTA for further TCP/IP protocol-supported processing (the processed frames are returned to host 52 under the fast-path mode for further Transport Driver Interface TDI processing, paragraph 0094, Fig. 1).

Regarding claim 41, Boucher discloses the system of claim 40, further comprising means to connect said hardware network layer (connecting the hardware IP layer 74 using the fast path at host 52, Fig. 1) to an external data link layer (to the external MAC layer 63 at INIC 50, Fig. 1), whereby said protocol-unsupported packets may originate in said external data link layer (finding that the frames are unsupported by the host or where the connection is maintained by the INIC 50, then the frames are being processed originate from the external MAC layer 63, paragraph 0170, Fig. 1).

Allowable Subject Matter

5. Claims 10, 34-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 10, the method of claim 9, wherein said step of checking is preceded by the steps of round robin arbitrating the joining on said receive path of said packets originating from internal and external physical layers, and forwarding said packets to said internal network layer.

In claim 34, the network traffic accelerator of claim 33, wherein said first means further include a first switch connected in said internal return path between said first arbiter and said internal data link layer, said first switch operative to direct a packet for processing in a network layer selected from the group of said internal network layer and an external network layer.

In claim 36, the network traffic accelerator of claim 32, wherein said second means include a second switch connected in said internal transmit path between said internal transport and network layers, said second switch operative to direct a packet for processing in a network layer selected from the group of said internal network layer and an external network layer.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Mew /K. M./
Examiner, Art Unit 2616

/Chi H Pham/
Supervisory Patent Examiner, Art Unit
2616
5/29/08